UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,448	09/30/2003	Kevin Scott Beyer	SVL920030088US1	2447

45727 7590 01/23/2008

IP AUTHORITY, LLC
RAMRAJ SOUNDARARAJAN
4821A Eisenhower Ave
Alexandria, VA 22304

EXAMINER	
MYINT, DENNIS Y	

ART UNIT	PAPER NUMBER
2162	

MAIL DATE	DELIVERY MODE
01/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/605,448	BEYER ET AL.	
	Examiner	Art Unit	
	Dennis Myint	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Applicant's Amendment, filed on November 2, 2007.

2. Claims 23-44 are pending in this application. Claims 23, 31, and 39 are independent claims. In the Amendment filed on November 2, 2007, claims 23, 26, 31, 37, and 39 were amended. **This office action is made final.**

3. In light of amendments made to claims 23, 31, and 39, rejection of said claims and respective dependent claims under 35 U.S.C. 112 first paragraph and second paragraph is hereby withdrawn.

Response to Arguments

4. The applicant's arguments filed on **November 2, 2007**have been fully considered but they are not persuasive.

Applicant argued that *"by contrast, the claimed invention node insertion/deletion scheme is more robust as it is NOT limited by considerations of even and odd nodes"* (Applicant's argument, page 14 second paragraph).

Examiner respectfully disagrees all of the allegations as argued. Examiner, in his previous office action, gave detail explanation of claimed limitation and pointed out exact locations in the cited prior art. Examiner is entitled to give claim limitations their broadest reasonable interpretation in light of the specification. See MPEP 2111 [R-1] Interpretation of Claims-Broadest Reasonable Interpretation.

During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

In response it is pointed out that O'Neil employs odd numbers to assign to nodes.However, Rizzo teaches assigning key values from a lowest possible value to a highest possible value (Rizzo, Paragraph 0056, i.e., *It is necessary to represent two symbolic* ***values in the key field*** *data range--specifically a representation for positive infinity (+INF) and negative infinity (-INF) is required. It is assumed the key field to be represented with B bits in two's-complement system and to interpret* ***the greatest positive number*** *(2^{B-1}-1) as +INF* ***and the smallest negative number*** *(-2^{B-1}) as -INF. The key value has therefore a range of [-2^{B-1}+1, 2^{B-1}-2], boundary included).* As such, a method of O'Neil in view of Rizzo would assign node numbers from a possible lowest value to a possible highest value, including both even and odd numbers. Applicant is reminded that independent claims of the instant application are rejected under 35 U.S.C. 103 in view of the "combination" of O'Neil and Rizzo.

Additionally, Applicant argued that *"Rizzo teaches a key filed range between positive infinity and negative infinity (much like any rang that extends from negative infinity to positive infinity). However, there is no teaching for such a key field range to be used to represent low and high key values in node ID calculation"* (Applicant's argument, page 15 second paragraph).

In response, it is pointed out that Rizzo teaches *a key field range to be used to represent low and high key values* and O'Neil teaches *assigning key values in node ID identification* as pointed in the prior and current office actions. As such, O'Neil in view of Rizzo teaches *a key field range to be used to represent low and high key values in node ID calculation.*

Finally, Applicant argued that "*Applicant also asserts that O'Neil and Rizzo, either singularly or in combination, fail to teach or suggest claim 23's feature of encoding said calculated new ID value and updating said computer storage storing said nodes of said hierarchical structure with said encoded value, wherein order, ID values, and relationship between parent, child, and siblings in said hierarchical structure of nodes stored in said storage remain unchanged with said insertion of new nodes*" (Applicant's argument, page 16 last paragraph and page 17 first paragraph).

In response, it is pointed out that O'Neil in view of Rizzo teaches said limitation of claim 23 as follows: "encoding" (Rizzo, Paragraph 0056) "said calculated new ID value and updating said computer storage storing said nodes of said hierarchical structure with said (encoded) value" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*), "wherein order, node ID values, and relationships between parent, child, and siblings in said hierarchical structure of nodes stored in said storage remain unchanged with said insertion of new node" (O'Neil , Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be*

inserted (or careted) into a hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above).

In view of the above, the examiner contends that all limitations as recited in the claims have been addressed in this Action. For the above reasons, Examiner believed that rejection of the last Office action was proper.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 23-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neil et al., (hereinafter "O'Neil") (U.S. Patent Number 6889226) in view of Rizzo et al., (hereinafter "Rizzo") (U.S. Patent Application Publication Number 2004/0068500A1).

As per claim 23, O'Neil is directed to a robust computer-based method for updating a computer-stored hierarchical structure of nodes via a node identification technique, said update retaining properties and parent/child relationships of said hierarchical structure without renumbering existing node ID values associated with said hierarchical structure (Abstract, i.e., *The hierarchically organized data is represented as a tree, and each node in the tree is assigned a position identifier that represents both depth level of the node within the hierarchy, and its ancestor/descendant relationship to other nodes*) and teaches the limitations:

(a) "receiving an instruction to insert a new node at an insertion point in said computer-stored hierarchical structure" (O'Neil , Figure 6; Figure 3; Figure 5: Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a*

hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above);

(b) "identifying one of, or a combination of the following: a left node ID value closest to the left of said insertion point or a closest right node ID value closest to the right of said insertion point" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*);

(c) "calculating a new ID value based upon node ID value(s) identified in (b), said calculated value greater than ID values of nodes to the left of said insertion point and less than ID values of nodes to the right of said insertion point" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*); and

(d) "(encoding) said calculated new ID value and updating said computer storage storing said nodes of said hierarchical structure with said (encoded) value" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*), "wherein order, node ID values, and relationships between parent, child, and siblings in said hierarchical structure of nodes stored in said storage remain unchanged with said insertion of new node" (O'Neil , Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a hierarchical data*

structure, while still maintaining the valuable properties of the position identifier numbering scheme described above).

O'Neil does not explicitly teach the limitation: "encoding" and "said new ID value based upon a low/high key value, said high key value representing a highest encodable value and said low key value representing lowest encodable value".

On the other hand, Rizzo teaches the limitation:

"encoding" (Rizzo, Paragraph 0056, i.e., *the key field to be represented with B bits in two's-complement system*) and "said new ID value based upon a low/high key value, said high key value representing a highest encodable value and said low key value representing lowest encodable value" (Rizzo, Paragraph 0056, i.e., *It is necessary to represent two symbolic* ***values in the key field*** *data range--specifically a representation for positive infinity (+INF) and negative infinity (-INF) is required. It is assumed the key field to be represented with B bits in two's-complement system and to interpret* ***the greatest positive number*** *(2^{B-1}-1) as +INF* ***and the smallest negative number*** *(-2^{B-1}) as -INF. The key value has therefore a range of [-2^{B-1}+1, 2^{B-1}-2], boundary included*).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the method of O'Neil to add the features of encoding key values into binary numbering system and employing a range of keys/ID's which fall between highest encodable value and lowest encodable value, as taught by Rizzo, to the method of O'Neil so that, in the resultant method, new ID value would be based

upon a low/high key value, said high key value representing positive infinity and said low key value representing negative infinity. One would have been motivated to do so in order to have a computer interpret positive infinity as the greatest positive number said computer could process and interpret negative infinity as the smallest number said computer could process (Rizzo, Paragraph 0056).

As per claim 24, O'Neil in view of Rizzo teaches the limitation:

"wherein said new ID value is calculated via any of the following steps: concatenating said left node ID value with one or more high key values and a positive value, decreasing last digit of said right node ID value, increasing last digit of left node ID value, decreasing last digit of said right node ID value and concatenating a positive value, or concatenating said left node ID value with one or more zeros and a positive value" (O'Neil , Column 9 Lines 10-13, i.e., *If node 610 later needs to be inserted in between nodes 608 and 504, the new node 610 will be numbered "1.0.1 (i.e., "0" is the even number between 1 and –1).*)

As per claim 25, O'Neil in view of Rizzo teaches the limitation:

"wherein a digit in said calculated ID value has a negative value" (O'Neil , Column 9 Lines 7-10, i.e., *although insertions to the left of a group of siblings may require a negative odd number – e.g., node 608, which is inserted to the left of the node having position number "1.1", has position number "1.-1"*).

As per claim 26, O'Neil in view of Rizzo teaches the limitation:

"wherein said encoding is binary encoding" (Rizzo, Paragraph 0056, i.e., *It is necessary to represent two symbolic values in the key field data range--specifically a representation for positive infinity (+INF) and negative infinity (-INF) is required. It is assumed the key field to be represented with* ***B bits in two's-complement system*** *and to interpret the greatest positive number* (2^{B-1}*-1) as +INF and the smallest negative number* (-2^{B-1}*) as -INF. The key value has therefore a range of* [-2^{B-1}*+1,* 2^{B-1}*-2], boundary included*)" and said highest encodable value is 1111 and said lowest value is 0000" (Rizzo, Paragraph 0056, i.e., *It is necessary to represent two symbolic values in the key field data range--specifically a representation for positive infinity (+INF) and negative infinity (-INF) is required. It is assumed the key field to be represented with* ***B bits in two's-complement system*** *and to interpret the greatest positive number* (2^{B-1}*-1) as +INF and the smallest negative number* (-2^{B-1}*) as -INF. The key value has therefore a range of* [-2^{B-1}*+1,* 2^{B-1}*-2], boundary included*). Note that Rizzo teaches a range of key values which are encoded in binary numbering system (i.e., B bits in two's-complement system). As such, a person of ordinary skill in the art could set the highest/lowest encodable value in binary numbers to any value, including 1111 and 0000.

As per claim 27, O'Neil in view of Rizzo teaches the limitation:

"wherein said ID values are encoded and are byte comparable" (O'Neil, Column 10 Lines 30-50, i.e., *The following table shows an exemplary set of Li values, and the prefix-property-obedient bit sequences that represent them*).

As per claim 28, O'Neil in view of Rizzo teaches the limitation:

"wherein said nodes are associated with a mark-up language based document" (O'Neil , Column 2 Lines 53-62, i.e., *Extensible Markup Language (XML);* Column 5 Line 38 through Column 6 Line 28, i.e., *Hierarchy structure of data 200,* and *By convention in XML, levels of organization are delimited by*).

As per claim 29, O'Neil in view of Rizzo teaches the limitation:

"wherein said mark-up based language is XML" (O'Neil , Column 2 Lines 53-62, i.e., *Extensible Markup Language (XML)*).

As per claim 30, O'Neil in view of Rizzo teaches the limitation:

"wherein said method is implemented in conjunction with a relational database" (O'Neil , Column 2 Lines 55-60, i.e., *The present invention provides a technique for storing such hierarchical data in a non-hierarchical data structure such as relation, which still maintaining information about the hierarchical structure of the data*).

Claims 31 is essentially the same as claim 23 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 32 is essentially the same as claim 24 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 33 is essentially the same as claim 27 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 34 is essentially the same as claim 28 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 35 is essentially the same as claim 29 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 36 is essentially the same as claim 30 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 37 is essentially the same as claim 26 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Claims 38 is essentially the same as claim 25 except that it set forth the claimed invention as an article of manufacture comprising a computer usable medium having readable program code rather than a method and rejected for the same reasons as applied hereinabove.

Referring to claim 39 O'Neal in view of Rizzo teaches the limitations:

(a) "receiving an instruction to insert a new node at an insertion point in said computer-stored hierarchical structure, said nodes of said hierarchical structure stored as binary encoded values in a computer storage" (O'Neil , Figure 6; Figure 3; Figure 5: Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above*);

(b) "identifying one of, or a combination of the following: a left node ID value closest to the left of said insertion point or a closest right node ID value closest to the right of said insertion point" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*);

(c) "calculating a new ID value for node to be inserted" (O'Neal, Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*) "based upon a low key value 0 or a high key value x, said high key value representing a highest binary encodable value and said low key value representing a highest binary encodable value" (Rizzo, Paragraph 0056, i.e., *It is necessary to represent two symbolic* ***values in the key field*** *data range--specifically a representation for positive infinity (+INF) and negative infinity (-INF) is required. It is assumed the key field to be represented with* ***B bits in two's-complement system*** *and to interpret* ***the greatest positive number*** *(2^{B-1}-1) as +INF and* ***the smallest negative number*** *(-2^{B-1}) as -INF. The key value has therefore a range of [-2^{B-1}+1, 2^{B-1}-2], boundary included*), "said calculation performed via one of the following ways: concatenating said left node ID value with one or more high key values and a positive value or concatenating said left ID value with one or more low key values and a positive value" (O'Neil, Column 9 Lines 10-13, i.e., *If node 610 later needs to be inserted in between nodes 608 and 504, the new node 610 will be numbered "1.0.1 (i.e., "0" is the even number between 1 and – 1;* Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position*

numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506); and

(d) "encoding said calculated new ID value and updating said computer storage storing said nodes of said hierarchical structure with said encoded value" (O'Neil , Column 8 Lines 58-62, i.e., *In this example, nodes 602 and 604 are assigned position numbers "1.2.1" and "1.2.3", respectively, now becoming sibling nodes to the right of 504 and to the left of 506*), "wherein order, node ID values, and relationships between parent, child, and siblings in said hierarchical structure of nodes stored in said storage remain unchanged with said insertion of new node" (O'Neil , Column 8 Lines 36-40, i.e., *Figure 5 and 6 show how data can be inserted (or careted) into a hierarchical data structure, while still maintaining the valuable properties of the position identifier numbering scheme described above*).

Claim 40 is rejected on the same basis as claim 25.

Claim 41 is rejected on the same basis as claim 27.

Claim 42 is rejected on the same basis as claim 28.

Claim 43 is rejected on the same basis as claim 29.

Claim 44 is rejected on the same basis as claim 30.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Myint whose telephone number is (571) 272-5629. The examiner can normally be reached on 8:30AM-5:30PM Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-5629.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jean Bolte Fleurantin
Primary Examiner
TC 2168

Dennis Myint
Examiner
AU-2162